AMENDMENTS

In the Claims

Claims 24-35 were previously canceled in response to a restriction requirement.

Please cancel claim 23 without prejudice.

Please amend claims 7, 20-22, and 36 as shown herein.

Claims 1-22 and 36-47 are pending and are listed following:

1. (original) An antenna element, comprising:

a front plate that includes slots configured for wireless communication signal transfer;

a dielectric configured to regulate a cutoff wavelength of the antenna element;

a channel guide coupled to the front plate and configured to confine the dielectric in a position that aligns the dielectric with the slots in the front plate; and

a back plate coupled to the channel guide and configured to enclose the dielectric within the channel guide to form an enclosed dielectric channel.

2. (original) An antenna element as recited in claim 1, wherein the dielectric is formed from a polystyrene material.

3. (original) An antenna element as recited in claim 1, wherein the dielectric includes a center conductive section and one or more cross-sections.

4. (original) An antenna element as recited in claim 1, wherein the dielectric includes a center conductive section and one or more cross-sections transverse to the center conductive section.

5. (original) An antenna element as recited in claim 1, wherein:

the dielectric includes a center conductive section and one or more cross-sections perpendicular to the center conductive section;

the center conductive section extends lengthwise within the enclosed dielectric channel; and

the one or more cross-sections are spaced within the enclosed dielectric channel to align with the slots in the front plate.

6. (original) An antenna element as recited in claim 1, wherein:

the dielectric includes a center conductive section and one or more cross-sections perpendicular to the center conductive section;

the center conductive section extends lengthwise within the enclosed dielectric channel between a first row of the slots and a second row of the slots; and

the one or more cross-sections are spaced within the enclosed dielectric channel to align with the slots in the front plate.

7. (currently amended) An antenna element as recited in claim 1, wherein the channel guide includes at least a first sidewall and a second sidewall, and wherein the first sidewall and the second sidewall are each configured to prevent communication signal interference between the antenna element and an adjacent antenna element.

8. (original) An antenna element as recited in claim 1, wherein the front plate further includes the slots spaced apart a distance that is substantially equivalent to an antenna element wavelength divided by two.

9. (original) An antenna element as recited in claim 1, wherein the front plate further includes a first row of one or more of the slots and a second row of one or more of the slots.

10. (original) An antenna element as recited in claim 1, wherein the front plate further includes a first row of one or more of the slots and a second row of one or more of the slots, and wherein the slots in each of the first row and the second row are spaced apart a distance that is substantially equivalent to an antenna element wavelength divided by two.

11. (original) An antenna element as recited in claim 1, wherein the front plate further includes a first row of one or more of the slots and a second row of one or more of the slots, and wherein the slots in the first row are offset from the slots in the second row.

12. (original) An antenna element as recited in claim 1, wherein:

the front plate further includes a first row of one or more of the slots and a second row of one or more of the slots; and

the slots in the first row are offset from the slots in the second row in a direction parallel to the first row and a distance that is substantially a length of a slot.

13. (original) An antenna element as recited in claim 1, wherein the slots in the front plate are substantially rectangular.

14. (original) An antenna element as recited in claim 1, wherein the slots in the front plate are notched slots.

15. (original) An antenna element as recited in claim 1, wherein the slots in the front plate are offset slots.

16. (original) An antenna element as recited in claim 1, wherein the slots in the front plate are offset slots, and wherein an offset slot is substantially rectangular having an offset section formed about a transverse center of the offset slot.

17. (original) An antenna element as recited in claim 1, further comprising a connection system configured to communicatively couple the antenna element to an antenna system component.

18. (original) An antenna element as recited in claim 1, further comprising:

an RF connection system configured to communicatively couple the antenna element to an antenna system component; and

a fastener component configured to communicatively couple the dielectric to the RF connection system without an RF connector.

19. (original) An antenna assembly comprising one or more antenna elements as recited in claim 1.

20. (currently amended) ~~A~~ An antenna assembly comprising antenna elements each formed as a waveguide enclosing a solid dielectric.

21. (currently amended) ~~A waveguide enclosing a solid dielectric~~ An antenna assembly as recited in claim 20, wherein:

the solid dielectric includes a center conductive section and one or more cross-sections perpendicular to the center conductive section;

the center conductive section extends lengthwise within the ~~enclosed~~ waveguide; and

the one or more cross-sections are spaced within the ~~enclosed~~ waveguide to align with communication signal transfer slots in the ~~enclosed~~ waveguide.

22. (currently amended) ~~A waveguide enclosing a solid dielectric~~ An antenna assembly as recited in claim 20, wherein the ~~enclosed~~ waveguide includes:

a front plate having communication signal transfer slots;

a channel guide coupled to the front plate and configured to confine the solid dielectric in a position that aligns the solid dielectric with the communication signal transfer slots; and

a back plate coupled to the channel guide to enclose the solid dielectric within the channel guide.

23-35. (canceled)

36. (currently amended) A method, comprising:

forming a front plate of an antenna assembly with slots configured to wirelessly transfer communication signals;

forming a channel guide of an antenna element;

forming a back plate of the antenna assembly; and

attaching the front plate, the channel guide, and the back plate together to form the antenna element of the antenna assembly, the antenna element being formed as a conductive channel that encloses a solid dielectric.

37. (original) A method as recited in claim 36, further comprising forming the solid dielectric to regulate a cutoff wavelength of the conductive channel.

38. (original) A method as recited in claim 36, further comprising forming the solid dielectric with a center conductive section and one or more transverse cross-sections.

39. (original) A method as recited in claim 36, further comprising forming the solid dielectric with a center conductive section and one or more cross-sections perpendicular to the center conductive section.

40. (original) A method as recited in claim 36, further comprising:

forming the solid dielectric with a center conductive section and one or more cross-sections perpendicular to the center conductive section; and

positioning the solid dielectric such that the center conductive section extends lengthwise within the conductive channel and the one or more cross-sections are spaced to align with the slots in the front plate.

41. (original) A method as recited in claim 36, wherein forming the channel guide includes forming the channel guide with at least a first sidewall and a second sidewall, and wherein the first sidewall and the second sidewall are each configured to prevent communication signal interference with an adjacent conductive channel.

42. (original) A method as recited in claim 36, wherein forming the front plate includes forming the front plate with a first row of one or more of the slots and a second row of one or more of the slots.

43. (original) A method as recited in claim 36, wherein forming the front plate includes forming the front plate with a first row of one or more of the slots and a second row of one or more of the slots, and wherein the slots in the first row are offset from the slots in the second row.

44. (original) A method as recited in claim 36, wherein forming the front plate includes forming the front plate with the slots that are substantially rectangular.

45. (original) A method as recited in claim 36, wherein forming the front plate includes forming the front plate with the slots that are offset slots.

46. (original) A method as recited in claim 36, wherein forming the front plate includes forming the front plate with the slots that are offset slots, and wherein each offset slot has an offset section formed about a transverse center of the offset slot.

47. (original) A method as recited in claim 36, further comprising coupling the solid dielectric to an RF conductive trace of an RF connection system without using an RF connector.